

[0016] FIG. 4 is an illustration of a system for charging electric vehicles wherein the energy supplier contacts a user;

[0017] FIG. 5 is a flow diagram illustrating a method for charging electric vehicles consistent with some embodiments of the present disclosure;

[0018] FIG. 6 is a flow diagram illustrating a method for users to purchase and sell electrical energy;

[0019] FIG. 7 is a flow diagram illustrating a method for selling users' stored electrical energy for some embodiments;

[0020] FIG. 7A is a flow diagram illustrating some embodiments of a method for sharing electricity;

[0021] FIG. 8 is an illustration of a system for charging electric vehicles wherein electrical energy is accessible at a charging station;

[0022] FIG. 9 is a flow diagram illustrating a method of selling electrical energy, for example, from employees to employers;

[0023] FIGS. 10A and 10B illustrate some embodiments of a train transport;

[0024] FIG. 11 illustrates an embodiment of a towable vehicle; and

[0025] FIG. 12 illustrates some embodiments of the transfer of energy between various mediums.

DETAILED DESCRIPTION OF THE PREFERRED EMBODIMENTS

Definitions

[0026] As used in this description, drawings, and the accompanying claims, the following terms shall have the meanings indicated, unless the context otherwise requires:

[0027] A "vehicle" may include any means in or by which someone travels or something is carried or conveyed, or a conveyance moving on wheels, runners, tracks, treads, skis, arcuate elements, ground-contacting members, or the like. A vehicle may also include a watercraft, an aircraft or anything that is supported for flight in the air by buoyancy or by the dynamic action of air on its surfaces. A vehicle may also be propelled or pulled by something or someone.

[0028] A "charging vehicle" may be any type of vehicle capable of providing energy.

[0029] A "charging device" or "charging station" may be stationary, parked, mobile (such as a portable trailer or a pod), wireless, i.e., inductively coupled, or through a microwave laser beam, charged particle beams, or any other apparatus or device capable of providing energy. In some embodiments, the "charging" may take place while the vehicle is in motion, e.g., at highway speeds. A "charging device" may work identical to or similar to a "charging vehicle." Throughout the disclosure, "charging device," "charging station," and "pod" are used interchangeably.

[0030] An "electric vehicle" may be any type of vehicle at least partially reliant on at least one battery to power at least part and/or a portion of the vehicle. For example, an electric vehicle may include, but is not limited to, one or more of the following: an electric car, electric truck, or a hybrid car or hybrid truck.

[0031] A "database" may include a collection of information from which a computer program may select a desired piece of data. More specifically, a database may include any type of system for storing data in volatile and/or non-volatile storage. This includes, but is not limited to, systems based upon magnetic, optical, and magneto-optical storage

devices, storage devices based on flash memory and/or battery-backed up memory, random access memory (including dynamic random access memory and static random access memory), content addressable memory, and/or dual-ported RAM. As used herein, database may be used in conjunction with or interchangeably with network, system, processor, or any other combination of hardware and/or software to achieve tasks such as, but not limited to, contacting a user or vehicle, communicating with a user or vehicle, communicating with a utility company, communicating with a parking garage, communicating with a Global Positioning Satellite, purchasing electricity, receiving and sending payments, and the like. Throughout the disclosure, "database" and "central database" are used interchangeably.

[0032] A "network" may include a series of points or nodes interconnected by communication paths. Networks may interconnect with other networks and contain sub-networks. A network may transmit or receive any type of data. In some embodiments the network may consist of any wireless protocols or other communication protocols. As used herein, network may be used in conjunction with or interchangeably with database, system, or any other combination of hardware and/or software to achieve tasks such as, but not limited to, contacting a user or vehicle, communicating with a user or vehicle, communicating with a utility company, communicating with a parking garage, communicating with a Global Positioning Satellite, and the like.

[0033] The present disclosure describes embodiments of a system for charging at least partially electric vehicles 100 or any battery contained within an at least partially electric vehicle. In FIG. 1, the system includes an at least partially electric vehicle 102, a charging vehicle 104, and a network 106. The electric vehicle 102 (which, throughout the disclosure, may be an at least partially electric vehicle) may, in some embodiments, request a transfer of electrical energy from the charging vehicle 104 to charge the electric vehicle's battery using the network 106. In some embodiments, the request may be instigated manually by a user.

[0034] Electric vehicles or plug-in hybrids generally include various connectors, power connectors and communications connectors. The charging port may be a specific port for fast-charging, and/or may include a communications port for determining characteristics of the vehicle's battery. In some embodiments, the charging port is electrically coupled to a battery for powering at least part of the vehicle. Generally, vehicles also include a main/standard connector, i.e., the interface in which the vehicle receives charge. In some embodiments, the fast-charging connector or coupling replaces the main connector/coupling. In various embodiments, the coupling may be inductive or conductive. The coupling is any one of those known in the art. Additionally, in some embodiments, a feature is included to sense the type of battery intended to be charged.

[0035] In an exemplary embodiment, the electric vehicle may include an electrical connection (not shown in FIG. 1) and a communications system (not shown in FIG. 1). The electrical connection allows the electric vehicle 102 to receive energy from the charging vehicle 104. The electrical connection may be installed as a kit to an existing vehicle, or, in some embodiments, the electrical connection may be built into the vehicle. The electrical connection may be electromechanical or semiconductor.

[0036] Both the electric vehicle 102 and charging vehicle 104 include couplers, allowing them to be connected in